

UNITED STATES PATENT AND TRADEMARK OFFICE
CERTIFICATE OF CORRECTION

PATENT NO. : 7,072,717 B1
APPLICATION NO. : 10/030830
DATED : July 4, 2006
INVENTOR(S) : Joe Wolf et al.

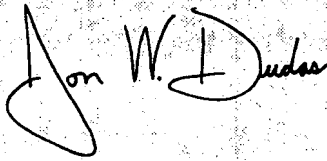
Page 1 of 8

It is certified that error appears in the above-identified patent and that said Letters Patent is hereby corrected as shown below:

The title page should be deleted and substitute therefore the attached title page.
In the drawings, Sheet 1, Figure 1 is replaced with the Formal Drawing attached hereto.
In the drawings, Sheet 2, Figure 1A is replaced with the Formal Drawing attached hereto.
In the drawings, Sheet 3, Figure 2 is replaced with the Formal Drawing attached hereto.
In the drawings, Sheet 4, Figure 3A is replaced with the Formal Drawing attached hereto.
In the drawings, Sheet 4, Figure 3B is replaced with the Formal Drawing attached hereto.
In the drawings, Sheet 4, Figure 3C is replaced with the Formal Drawing attached hereto.
In the drawings, Sheet 4, Figure 3D is replaced with the Formal Drawing attached hereto.
In the drawings, Sheet 4, Figure 3E is replaced with the Formal Drawing attached hereto.
In the drawings, Sheet 5, Figure 4 is replaced with the Formal Drawing attached hereto.
In the drawings, Sheet 6, Figure 5 is replaced with the Formal Drawing attached hereto.

Signed and Sealed this

Third Day of April, 2007

A handwritten signature in black ink, reading "Jon W. Dudas". The signature is stylized, with a large, looped initial "J" and a distinct "D".

JON W. DUDAS
Director of the United States Patent and Trademark Office

(12) **United States Patent**
Wolf et al.

(10) Patent No.: **US 7,072,717 B1**
 (45) Date of Patent: **Jul. 4, 2006**

(54) **MULTIRATE COCHLEAR STIMULATION STRATEGY AND APPARATUS**

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(73) Assignee: **Cochlear Limited, Lane Cove (AU)**

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 618 days.

(21) Appl. No.: **10/030,830**

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§ 371 (c)(1),
 (2), (4) Date: **Jun. 5, 2002**

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PCT Pub. Date: **Jan. 18, 2001**

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(51) Int. Cl.
A61F 11/04 (2006.01)
H04R 25/00 (2006.01)

(52) U.S. Cl. **607/57; 381/320**

(58) Field of Classification Search **607/55-57, 607/136, 137**
 See application file for complete search history.

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(57) **ABSTRACT**

An improved processing approach is disclosed in order to allow for different rates of stimulation to be used for different electrodes in a multi-electrode cochlear implant. When the incoming signal is processed by filter array (35), each channel is processed to determine amplitude (37) and to estimate the period of the signal in that channel (39). The amplitude and period information is used to determine which electrode is stimulated, and the timing of that stimulation.

18 Claims, 6 Drawing Sheets

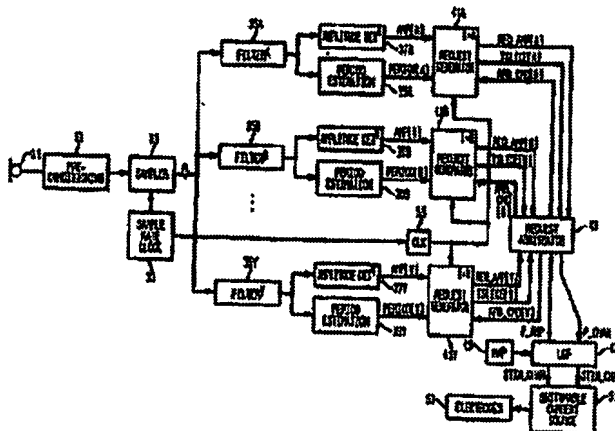


FIG. 1

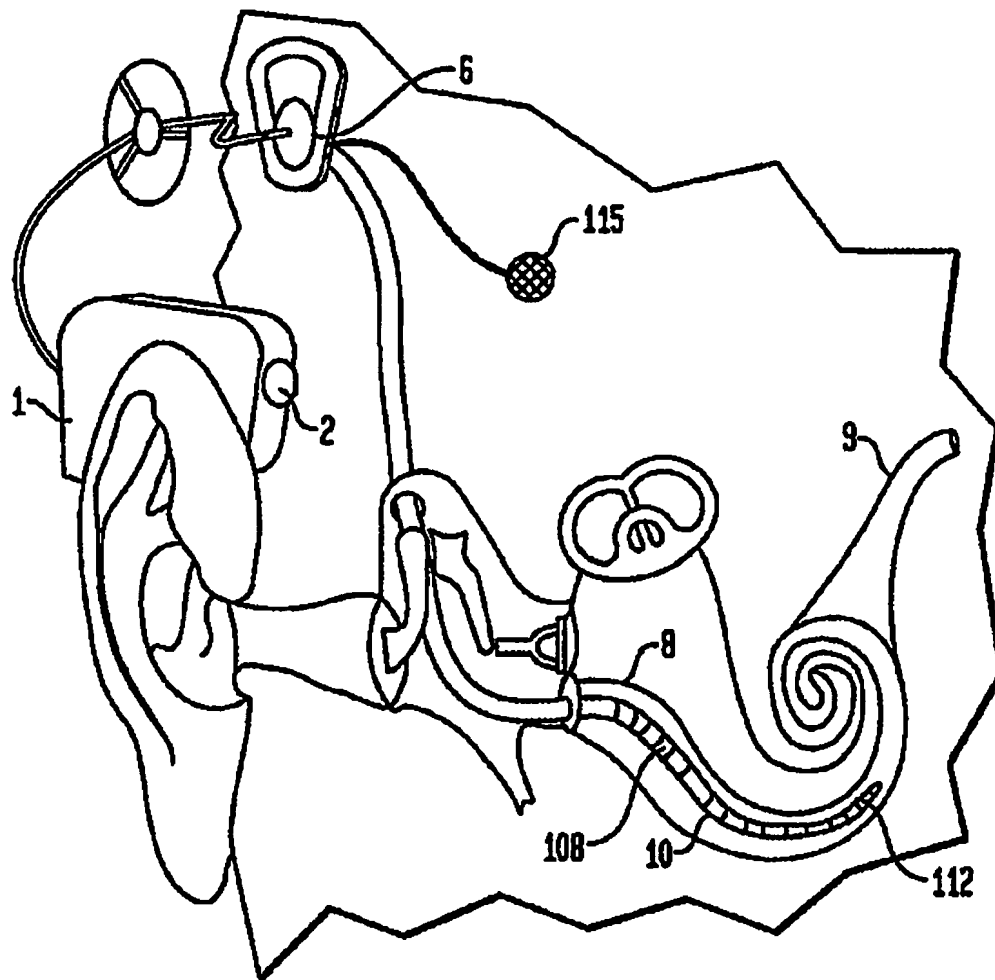
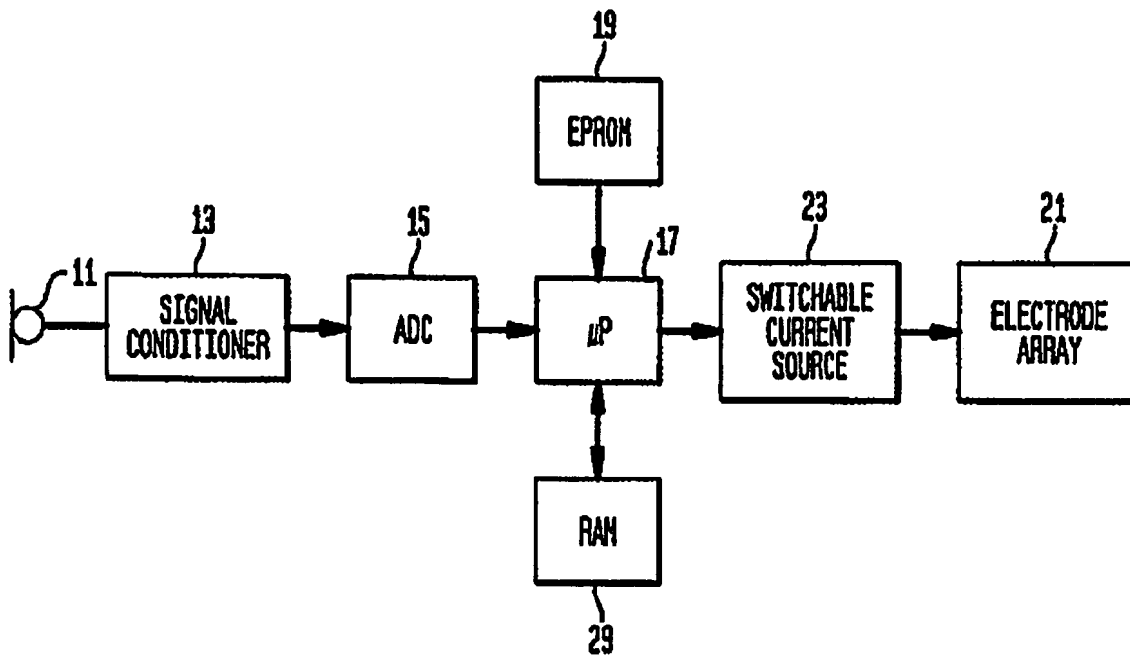


FIG. 1A



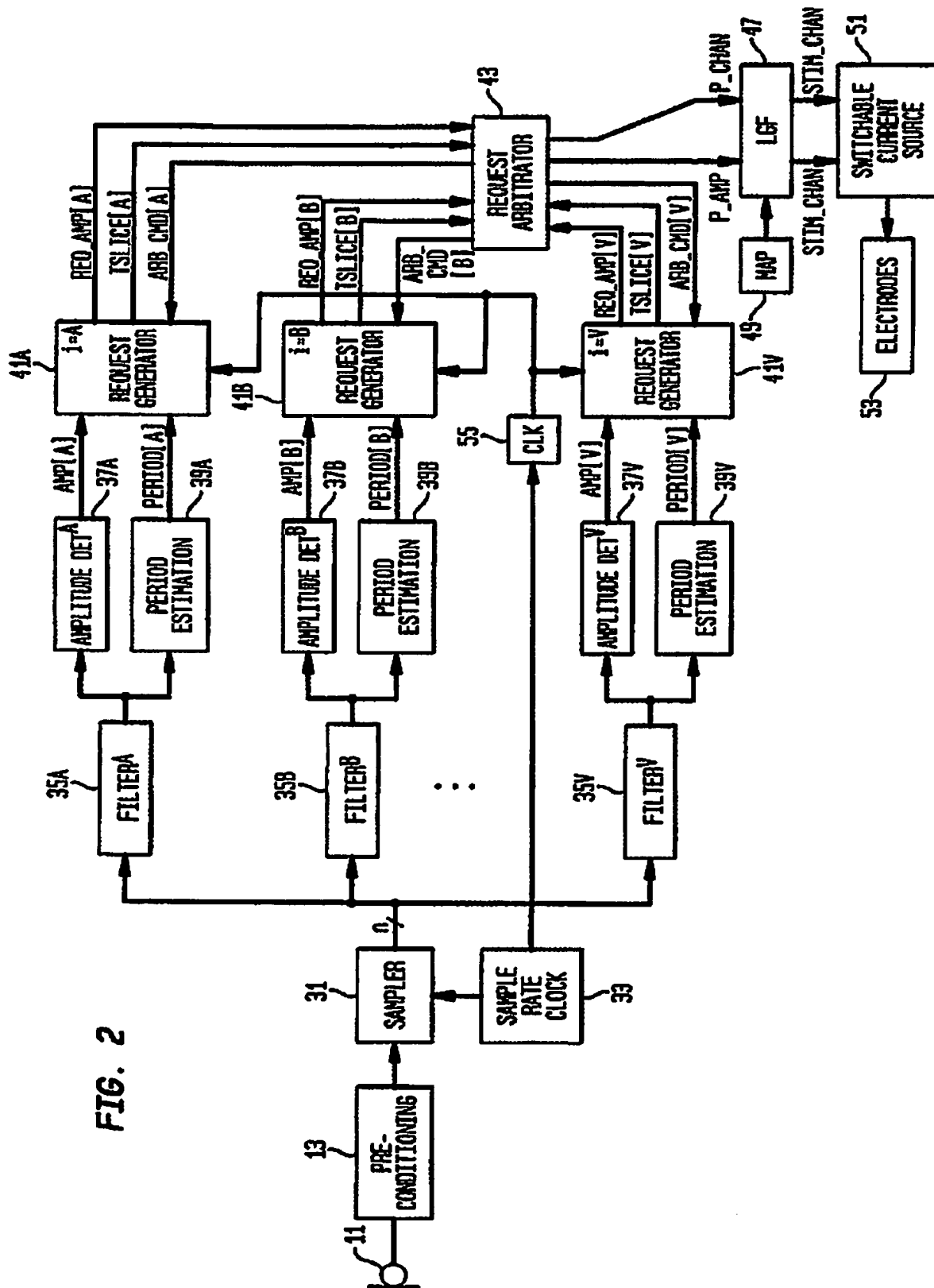


FIG. 3A

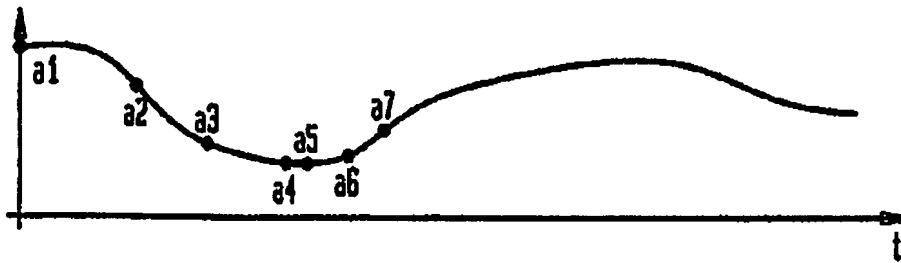


FIG. 3B

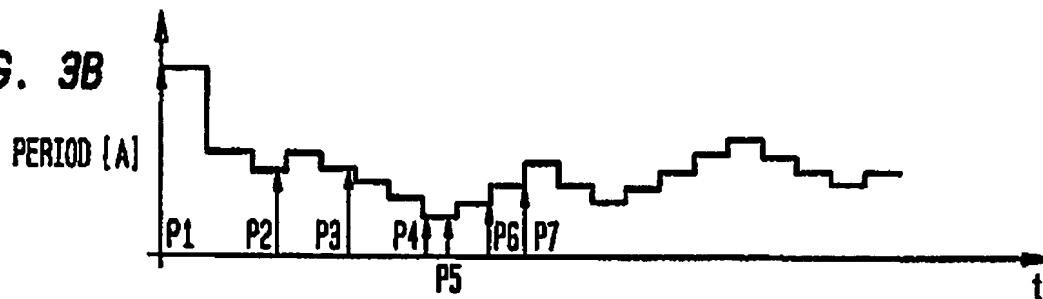


FIG. 3C

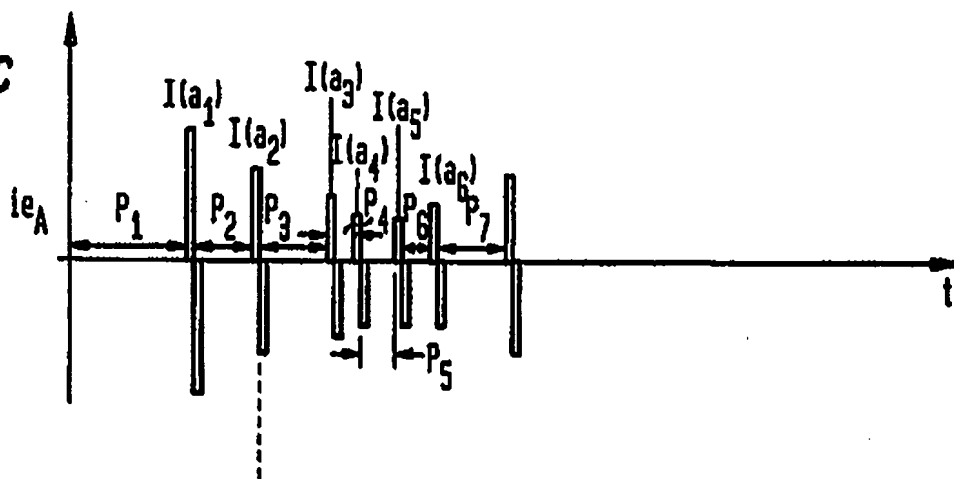


FIG. 3D

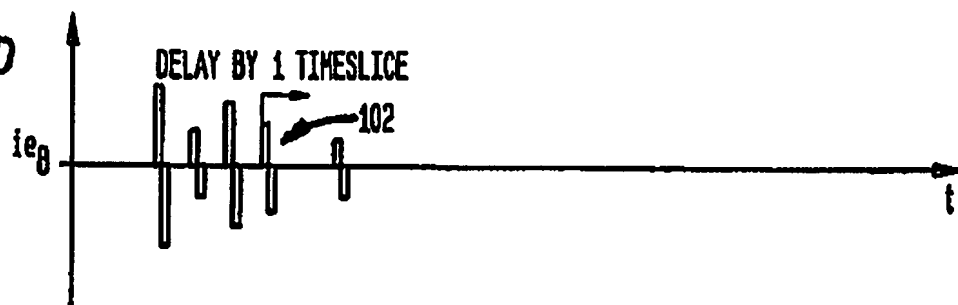


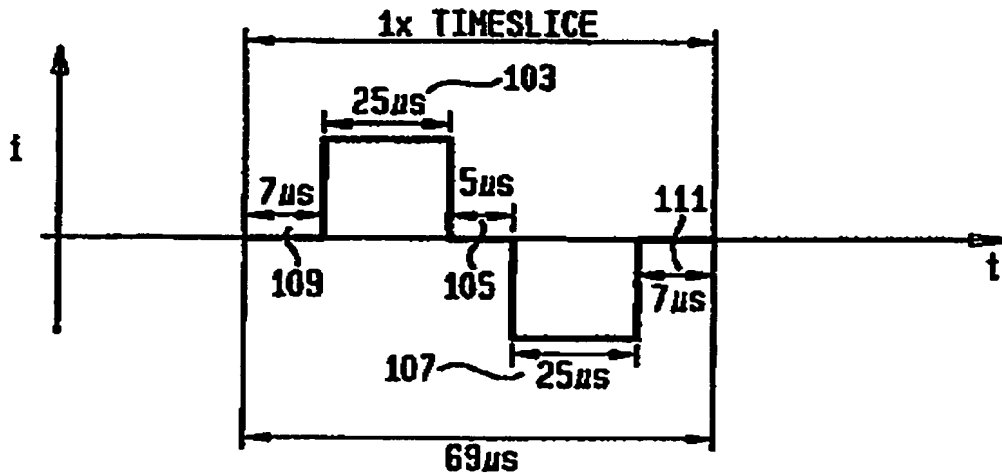
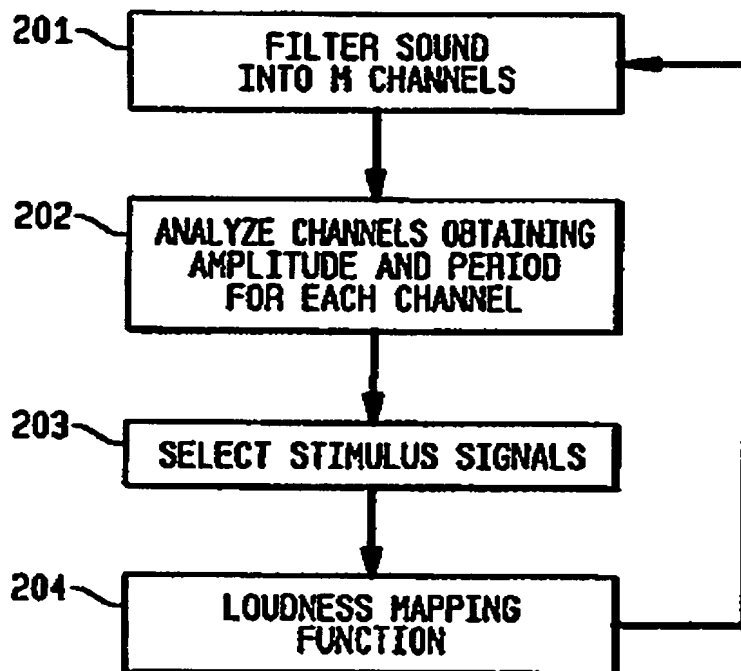
FIG. 3E**FIG. 4**

FIG. 5